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(FILE 'HOME' ENTERED AT 11:05:17 ON 11 DEC 2006)

FILE 'HCAPLUS' ENTERED AT 11:05:31 ON 11 DEC 2006

L1 1 SEA US2004071875/PN

FILE 'REGISTRY' ENTERED AT 11:07:00 ON 11 DEC 2006

L2 2 SEA (11115-71-2/BI OR 7440-65-5/BI)

L3 8147 SEA (BI(L)TI(L)O)/ELS

L4 91 SEA L3(L)3/ELC.SUB

L5 10 SEA L3(L)Y/ELS (L) 4/ELC.SUB

L6 1 SEA 7440-65-5/RN

FILE 'HCAPLUS' ENTERED AT 11:33:23 ON 11 DEC 2006

L7 9 SEA L5

L8 2925 SEA L4

L9 39627 SEA L6

L10 2745 SEA L6(L)MOA/RL

L11 1259 SEA L6(L) (DOPE# OR DOPING# OR DOPANT#)

L12 9 SEA L8 AND L9

L13 5 SEA L8 AND (L10 OR L11)

L14 9 SEA L12 OR L13

L15 8 SEA L14 NOT L7

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 11:53:29 ON 11 DEC 2006
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=> d l7 ibib abs hitstr hitind 1-9

L7 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1037235 HCAPLUS Full-text

DOCUMENT NUMBER: 143:470864

TITLE: Structural and ferroelectric properties of
yttrium substituted bismuth titanium thin films

AUTHOR(S): Ma, J.; Gu, J.; Su, D.; Wu, X. M.; Song, C. H.;
Li, W.; Lu, X. M.; Zhu, J. S.

CORPORATE SOURCE: National laboratory of Solid State
Microstructures, Department of Physics, Nanjing
University, Nanjing, 210093, Peop. Rep. China

SOURCE: Thin Solid Films (2005), 492(1-2), 264-268
CODEN: THSFAP; ISSN: 0040-6090

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Yttrium substituted $\text{Bi}_{4-x}\text{Y}_x\text{Ti}_3\text{O}_{12}$ ($x = 0.00, 0.10, 0.30, 0.50, 0.75, 1.00$) polycryst. thin films were synthesized by metal-organic decomposition method. Ferroelec. measurements revealed that the $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ (BTO) films substituted by Y with appropriate ratios could have higher remnant polarization and significantly improved fatigue behavior compared with BTO. The remnant polarization of the $\text{Bi}_{3.50}\text{Y}_{0.50}\text{Ti}_3\text{O}_{12}$ capacitor reached $10 \mu\text{C}/\text{cm}^2$ at an applied field about $120 \text{ kV}/\text{cm}$ with nearly fatigue free property up to 1010 cycles. By using Raman spectra, X-ray diffraction, and scanning electron microscope to analyze the structure and composition of the films, it was found that the Y substitution of Bi at A-site induces changes in film orientation and the lattice distortion that are probably responsible for the improved ferroelec. properties. The microstructure and its relation with the leakage behavior of these thin films were also discussed.

IT 824410-93-7P, Bismuth titanium yttrium oxide
 ($\text{Bi}_{3.25}\text{Ti}_3\text{Y}_{0.75}\text{O}_{12}$) 850913-13-2P, Bismuth titanium
 oxide ($\text{Bi}_{3.9}\text{Ti}_3\text{Y}_{0.10}\text{O}_{12}$) 850913-14-3P, Bismuth titanium
 yttrium oxide ($\text{Bi}_{3.7}\text{Ti}_3\text{Y}_{0.30}\text{O}_{12}$) 850913-15-4P, Bismuth
 titanium yttrium oxide ($\text{Bi}_{3.5}\text{Ti}_3\text{Y}_{0.50}\text{O}_{12}$) 850913-17-6P,
 Bismuth titanium yttrium oxide ($\text{Bi}_3\text{Ti}_3\text{YO}_{12}$)
 RL: DEV (Device component use); PNU (Preparation, unclassified);
 PREP (Preparation); USES (Uses)
 (structural and ferroelec. properties of yttrium substituted
 bismuth titanium thin films)

RN 824410-93-7 HCAPLUS

CN Bismuth titanium yttrium oxide ($\text{Bi}_{3.25}\text{Ti}_3\text{Y}_{0.75}\text{O}_{12}$) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.25	7440-69-9
Y	0.75	7440-65-5
Ti	3	7440-32-6

RN 850913-13-2 HCAPLUS

CN Bismuth titanium yttrium oxide ($\text{Bi}_{3.9}\text{Ti}_3\text{Y}_{0.10}\text{O}_{12}$) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.9	7440-69-9
Y	0.1	7440-65-5
Ti	3	7440-32-6

RN 850913-14-3 HCAPLUS

CN Bismuth titanium yttrium oxide ($\text{Bi}_{3.7}\text{Ti}_3\text{Y}_{0.30}\text{O}_{12}$) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.7	7440-69-9
Y	0.3	7440-65-5
Ti	3	7440-32-6

RN 850913-15-4 HCAPLUS

CN Bismuth titanium yttrium oxide ($\text{Bi}_{3.5}\text{Ti}_3\text{Y}_{0.50}\text{O}_{12}$) (9CI) (CA INDEX
 NAME)

NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.5	7440-69-9
Y	0.5	7440-65-5
Ti	3	7440-32-6

RN 850913-17-6 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi₃Ti₃YO₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3	7440-69-9
Y	1	7440-65-5
Ti	3	7440-32-6

CC 76-10 (Electric Phenomena)

Section cross-reference(s): 66, 73, 75

IT 12010-77-4P, Bismuth titanium oxide (Bi₄Ti₃O₁₂) 824410-93-7P, Bismuth titanium yttrium oxide (Bi_{3.25}Ti₃Y_{0.75}O₁₂)

850913-13-2P, Bismuth titanium yttrium oxide

(Bi_{3.9}Ti₃Y_{0.10}O₁₂) 850913-14-3P, Bismuth titanium yttriumoxide (Bi_{3.7}Ti₃Y_{0.30}O₁₂) 850913-15-4P, Bismuth titaniumyttrium oxide (Bi_{3.5}Ti₃Y_{0.50}O₁₂) 850913-17-6P, Bismuthtitanium yttrium oxide (Bi₃Ti₃YO₁₂)

RL: DEV (Device component use); PNU (Preparation, unclassified);

PREP (Preparation); USES (Uses)

(structural and ferroelec. properties of yttrium substituted
bismuth titanium thin films)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L7 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:224348 HCAPLUS Full-text

DOCUMENT NUMBER: 143:295908

TITLE: Stabilization of pyrochlore-type bismuth
titanate with additions of Y₂O₃ and Nd₂O₃

AUTHOR(S): Kunej, Spela; Valant, Matjaz; Suvorov, Danilo

CORPORATE SOURCE: Inst. Jozef Stefan, Ljubljana, 1000, Slovenia

SOURCE: Slovenski Kemijski Dnevi, 10th, Maribor,
Slovenia, Sept. 23-24, 2004 (2004), Meeting Date
2004, 631-636. Univerza v Mariboru, Fakulteta
za Kemijo in Kemijsko Tehnologijo: Maribor,
Slovenia.

CODEN: 69GCC7; ISBN: 86-435-0640-0

DOCUMENT TYPE: Conference; (computer optical disk)

LANGUAGE: Slovenian

AB Using SEM combined with energy dispersive (EDS), wavelength dispersive (WDS)
electron probe microanal. and x-ray powder diffraction (XRD) the authors
determined minimal concns. of substituents Y₂O₃ and Nd₂O₃ needed to stabilize the
defect Bi titanate pyrochlore. Compns. of the stabilized pyrochlores thus
determined are: Bi_{1.58}(±0.03)Y_{0.04}(±0.01)Ti₂O_{6.43}(±0.04) and
Bi_{1.34}(±0.01)Nd_{0.25}(±0.004)Ti₂O_{6.38}(±0.03). In both cases, the authors determined
similar concns. of vacancies on A sites, from which most stable nondoped Bi

titanate pyrochlore is forming in the narrow composition range around $\text{Bi}_{1.6}\text{Ti}_2\text{O}_{6.4}$. The concentration of Y_2O_3 needed for the stabilization of the pyrochlore is smaller compared to the concentration of Nd_2O_3 .

IT 864381-96-4P, Bismuth titanium yttrium oxide
($\text{Bi}_{1.58}\text{Ti}_2\text{Y}_{0.04}\text{O}_{6.43}$)

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(stabilization of pyrochlore-type bismuth titanate with addns. of yttrium oxide and neodymium oxide)

RN 864381-96-4 HCAPLUS

CN Bismuth titanium yttrium oxide ($\text{Bi}_{1.58}\text{Ti}_2\text{Y}_{0.04}\text{O}_{6.43}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	6.43	17778-80-2
Bi	1.58	7440-69-9
Y	0.04	7440-65-5
Ti	2	7440-32-6

CC 75-8 (Crystallography and Liquid Crystals)

Section cross-reference(s): 57

IT 864381-96-4P, Bismuth titanium yttrium oxide
($\text{Bi}_{1.58}\text{Ti}_2\text{Y}_{0.04}\text{O}_{6.43}$) 864381-97-5P, Bismuth neodymium titanium oxide ($\text{Bi}_{1.34}\text{Nd}_{0.25}\text{Ti}_2\text{O}_{6.38}$)

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(stabilization of pyrochlore-type bismuth titanate with addns. of yttrium oxide and neodymium oxide)

L7 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:86538 HCAPLUS Full-text

DOCUMENT NUMBER: 142:439672

TITLE: Structural and ferroelectric properties of
 $\text{Bi}_{4-x}\text{Y}_x\text{Ti}_3\text{O}_{12}$ films

AUTHOR(S): Ma, J.; Lou, J.; Su, D.; Wu, X. M.; Song, C. H.;
Lu, X. M.; Zhu, J. S.

CORPORATE SOURCE: National laboratory of Solid State
Microstructures, Department of Physics, Nanjing
University, Nanjing, 210093, Peop. Rep. China

SOURCE: Integrated Ferroelectrics (2004), 65, 105-115
CODEN: IFEREU; ISSN: 1058-4587

PUBLISHER: Taylor & Francis Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Y-substituted $\text{Bi}_{4-x}\text{Y}_x\text{Ti}_3\text{O}_{12}$ ($x = 0.00, 0.10, 0.30, 0.50, 0.75, 1.00$) polycryst. thin films were synthesized by metal-organic decomposition (MOD) method. Ferroelec. measurements revealed that the $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ films substituted by Y with appropriate ratios could have higher remnant polarization P_r and significantly improved fatigue behavior compared with BTO. The remnant polarization of the $\text{Bi}_{3.50}\text{Y}_{0.50}\text{Ti}_3\text{O}_{12}$ capacitor reached $10 \mu\text{C}/\text{cm}^2$ at an applied field $\approx 120 \text{ kV}/\text{cm}$ with nearly fatigue free property up to 1010 cycles. XRD patterns show a little impurity phases as well as Aurivillius phase in the crystallization process with different annealing temperature. Perhaps it induced the poor leakage current properties.

IT 824410-93-7, Bismuth titanium yttrium oxide
($\text{Bi}_{3.25}\text{Ti}_3\text{Y}_{0.75}\text{O}_{12}$) 850913-13-2, Bismuth titanium yttrium oxide ($\text{Bi}_{3.9}\text{Ti}_3\text{Y}_{0.10}\text{O}_{12}$) 850913-14-3, Bismuth titanium yttrium oxide ($\text{Bi}_{3.7}\text{Ti}_3\text{Y}_{0.30}\text{O}_{12}$) 850913-15-4, Bismuth

titanium yttrium oxide (Bi_{3.5}Ti₃Y_{0.5}O₁₂) 850913-17-6,

Bismuth titanium yttrium oxide (Bi₃Ti₃Y₀O₁₂)

RL: PEP (Physical, engineering or chemical process); PRP

(Properties); PYP (Physical process); PROC (Process)

(structural and ferroelec. properties of Bi_{4-x}Y_xTi₃O₁₂ polycryst.
thin films synthesized by metal-organic decomposition)

RN 824410-93-7 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{3.25}Ti₃Y_{0.75}O₁₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.25	7440-69-9
Y	0.75	7440-65-5
Ti	3	7440-32-6

RN 850913-13-2 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{3.9}Ti₃Y_{0.1}O₁₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.9	7440-69-9
Y	0.1	7440-65-5
Ti	3	7440-32-6

RN 850913-14-3 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{3.7}Ti₃Y_{0.3}O₁₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.7	7440-69-9
Y	0.3	7440-65-5
Ti	3	7440-32-6

RN 850913-15-4 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{3.5}Ti₃Y_{0.5}O₁₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.5	7440-69-9
Y	0.5	7440-65-5
Ti	3	7440-32-6

RN 850913-17-6 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi₃Ti₃Y₀O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	12	17778-80-2
Bi	3	7440-69-9
Y	1	7440-65-5
Ti	3	7440-32-6

CC 76-8 (Electric Phenomena)

IT 12010-77-4, Bismuth titanium oxide (Bi₄Ti₃O₁₂) 824410-93-7
 , Bismuth titanium yttrium oxide (Bi_{3.25}Ti₃Y_{0.75}O₁₂)
 850913-13-2, Bismuth titanium yttrium oxide
 (Bi_{3.9}Ti₃Y_{0.10}O₁₂) 850913-14-3, Bismuth titanium yttrium
 oxide (Bi_{3.7}Ti₃Y_{0.30}O₁₂) 850913-15-4, Bismuth titanium
 yttrium oxide (Bi_{3.5}Ti₃Y_{0.50}O₁₂) 850913-17-6, Bismuth
 titanium yttrium oxide (Bi₃Ti₃Y_{0.12})
 RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); PYP (Physical process); PROC (Process)
 (structural and ferroelec. properties of Bi_{4-x}Y_xTi₃O₁₂ polycryst.
 thin films synthesized by metal-organic decomposition)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L7 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:944474 HCAPLUS Full-text

DOCUMENT NUMBER: 142:145080

TITLE: Evolution of the chemical bonding nature of
 ferroelectric bismuth titanate upon cation
 substitution

AUTHOR(S): Hur, Su Gil; Park, Dae Hoon; Kim, Tae Woo;
 Hwang, Seong-Ju

CORPORATE SOURCE: Department of Applied Chemistry and Center for
 Emerging Wireless Transmission Technology,
 College of Natural Sciences, Konkuk University
 Chungju Campus, Chungbuk, 380-701, S. Korea

SOURCE: Applied Physics Letters (2004), 85(18),
 4130-4132

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The effect of cation substitution on the crystal and electronic structures of
 ferroelec. Bi titanate was systematically investigated. According to the x-ray
 diffraction analyses on Bi_{3.25}A_{0.75}Ti₃O₁₂ (A = Bi, La, Gd, and Y), it was found
 that the cation substitution gives rise to the contraction of the volume of the
 unit cell and to the decrease of the structural distortion of the bismuth
 titanate, as well. The present x-ray absorption spectroscopic results reveal that
 the local structural change upon chemical reduction is remarkably depressed by the
 cation substitution through the enhancement of (Ti-O) bonds. Such a stabilization
 of TiO₆ octahedra can be understood by a competition between adjacent (Bi-O) and
 (Ti-O) bonds as well as the contraction of the unit cell.

IT 824410-93-7, Bismuth titanium yttrium oxide
 (Bi_{3.25}Ti₃Y_{0.75}O₁₂)

RL: PRP (Properties)

(effect of cation substitution on crystal and electronic
 structures of ferroelec. Bi titanate)

RN 824410-93-7 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{3.25}Ti₃Y_{0.75}O₁₂) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
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Component	Ratio	Registry Number
O	12	17778-80-2
Bi	3.25	7440-69-9
Y	0.75	7440-65-5
Ti	3	7440-32-6

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 75

IT 12010-77-4, Bismuth titanate $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ 247152-49-4, Bismuth lanthanum titanium oxide $\text{Bi}_{3.25}\text{La}_{0.75}\text{Ti}_3\text{O}_{12}$ 291299-28-0, Bismuth gadolinium titanium oxide $\text{Bi}_{3.25}\text{Gd}_{0.75}\text{Ti}_3\text{O}_{12}$ 824410-93-7, Bismuth titanium yttrium oxide ($\text{Bi}_{3.25}\text{Ti}_3\text{Y}_{0.75}\text{O}_{12}$)

RL: PRP (Properties)

(effect of cation substitution on crystal and electronic structures of ferroelec. Bi titanate)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 5 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:42904 HCAPLUS Full-text

DOCUMENT NUMBER: 141:63052

TITLE: Yttrium-substituted bismuth titanate ($\text{Bi}_{4-x}\text{Y}_x\text{Ti}_3\text{O}_{12}$) thin film for use in non-volatile memories

AUTHOR(S): Kang, S. W.; Rhee, S. W.

CORPORATE SOURCE: Department of Chemical Engineering, Electrical and Computer Engineering Division, Pohang University of Science and Technology (POSTECH), Pohang, 790-784, S. Korea

SOURCE: Journal of Materials Science: Materials in Electronics (2004), 15(4), 231-234
CODEN: JSMEEV; ISSN: 0957-4522

PUBLISHER: Kluwer Academic Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Fatigue-free $\text{Bi}_{3.2}\text{Y}_{0.8}\text{Ti}_3\text{O}_{12}$ (BYT) thin films were grown on Pt/TiO₂/SiO₂/Si substrates using direct liquid injection-metalorg. chemical vapor deposition. The BYT film capacitor with top Au electrode showed higher remanent polarization (2Pr) and lower leakage c.d. compared with $\text{Bi}_{3.2}\text{La}_{0.8}\text{Ti}_3\text{O}_{12}$ (BLT) film capacitors. BYT films showed strong (1 1 7) orientation with smaller grain size, while BLT films showed strong c-axis orientation. The 2Pr value of the BYT capacitor was 15 $\mu\text{C cm}^{-2}$ and remained essentially constant up to 1×10^{10} read/write switching cycles at a frequency of 1 MHz. The leakage current of the BYT film was $3.5 \times 10^{-7} \text{ A cm}^{-2}$ at an applied voltage of 2 V, which is about three orders lower than that of the BLT film.

IT 581097-27-0, Bismuth titanium yttrium oxide ($\text{Bi}_{3.2}\text{Ti}_3\text{Y}_{0.8}\text{O}_{12}$)

RL: DEV (Device component use); PRP (Properties); USES (Uses)
($\text{Bi}_{3.2}\text{Y}_{0.8}\text{Ti}_3\text{O}_{12}$ thin film for use in nonvolatile memories)

RN 581097-27-0 HCAPLUS

CN Bismuth titanium yttrium oxide ($\text{Bi}_{3.2}\text{Ti}_3\text{Y}_{0.8}\text{O}_{12}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Bi	3.2	7440-69-9
Y	0.8	7440-65-5

Ti | 3 | 7440-32-6

CC 76-14 (Electric Phenomena)

IT 581097-27-0, Bismuth titanium yttrium oxide
(Bi_{3.2}Ti₃Y_{0.8}O₁₂)

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(Bi_{3.2}Y_{0.8}Ti₃O₁₂ thin film for use in nonvolatile memories)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L7 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:692049 HCAPLUS Full-text

DOCUMENT NUMBER: 139:188538

TITLE: Deposition of yttrium or lanthanum-substituted
bismuth titanate films by direct liquid
injection - metal organic chemical vapor
deposition for use in non-volatile memories

AUTHOR(S): Kang, Sang-Woo; Rhee, Shi-Woo

CORPORATE SOURCE: Laboratory for Advanced Molecular Processing,
Department of Chemical Engineering, Pohang
University of Science and Technology, Pohang,
790-784, S. Korea

SOURCE: Proceedings - Electrochemical Society (2003),
2003-8 (Chemical Vapor Deposition XVI and EUROCV
14, Volume 2), 1419-1425
CODEN: PESODO; ISSN: 0161-6374

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Deposition of Bi_{4-x}La_xTi₃O₁₂ (BLT) and Bi_{4-x}Y_xTi₃O₁₂ (BYT) films with direct
liquid injection (DLI)-metal organic chemical vapor deposition (MOCVD) using a
single-mixed solution was studied. On Pt substrate, the deposition rate of the
BLT and BYT film was measured. The crystallization and elec. properties of the
film as a function of annealing temps. was investigated. These properties were
changed by substitution or doping elements (La and Y). Lattice parameters are
BLT: a 5.423, b 5.415, c 32.89 Å; BYT: a 5.400, b 5.434, c 32.78 Å. Both films
(BLT and BYT) did not show any significant fatigue up to about 1010 cycles at a
frequency of 1 MHz and had enough remanent polarization for application of non-
volatile memory.

IT 581097-27-0, Bismuth titanium yttrium oxide
(Bi_{3.2}Ti₃Y_{0.8}O₁₂)

RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PRP (Properties); TEM (Technical or engineered material
use); PROC (Process); USES (Uses)

(deposition of Y or La-substituted Bi titanate films by direct
liquid injection - MOCVD for use in nonvolatile memories)

RN 581097-27-0 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{3.2}Ti₃Y_{0.8}O₁₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	3.2	7440-69-9
Y	0.8	7440-65-5
Ti	3	7440-32-6

CC 75-1 (Crystallography and Liquid Crystals)

Section cross-reference(s): 76

IT 425430-68-8, Bismuth lanthanum titanium oxide (Bi_{3.2}La_{0.8}Ti₃O₁₂)
581097-27-0, Bismuth titanium yttrium oxide
(Bi_{3.2}Ti₃Y_{0.8}O₁₂)

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(deposition of Y or La-substituted Bi titanate films by direct liquid injection - MOCVD for use in nonvolatile memories)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:333593 HCAPLUS Full-text

DOCUMENT NUMBER: 127:88544

TITLE: Microscopy of bismuth oxide based mixed ionic-electronic conductors

AUTHOR(S): Namjoshi, Shantanu; Wang, Zhong Lin; Liu, Meilin

CORPORATE SOURCE: School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, 30332-0245, USA

SOURCE: Proceedings - Electrochemical Society (1997), 96-27(Ceramic Sensors), 171-185
CODEN: PESODO; ISSN: 0161-6374

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Mixed ionic-electronic conductors based on bismuth oxide are attractive materials for solid-state ionic devices and electrochem. processes at intermediate for low temps. In this study, electron microscopy and x-ray diffraction have been used to reveal the microscopic details of these materials. Results indicate that a mixture of silver and yttria-stabilized bismuth oxide (YSB) forms a composite with Ag-rich grains embedded in YSB matrix. Some fine particles of bismuth oxide, however, are observed in the Ag-rich grains in the composite. Characterization of Ti-doped and Cu-doped YSB, on the other hand, has shown the presence of several new phases, depending on the type and the amount of dopants. Titanium oxide appears to have a solubility of about 5 mol% in YSB while copper oxide has a solubility of about 2 mol% in YSB.

IT 191791-94-3P, Bismuth titanium yttrium oxide
(Bi_{1.42}Ti_{0.1}Y_{0.48}O₃)

RL: PNU (Preparation, unclassified); PREP (Preparation)
(formation in Ti-doped bismuth oxide based mixed ionic-electronic conductors)

RN 191791-94-3 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{1.42}Ti_{0.1}Y_{0.48}O₃) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Bi	1.42	7440-69-9
Y	0.48	7440-65-5
Ti	0.1	7440-32-6

CC 76-2 (Electric Phenomena)

IT 12010-77-4P, Bismuth titanium oxide (Bi₄Ti₃O₁₂) 39368-32-6P,
Bismuth copper oxide (Bi₂CuO₄) 191791-94-3P, Bismuth
titanium yttrium oxide (Bi_{1.42}Ti_{0.1}Y_{0.48}O₃) 191791-95-4P, Bismuth

copper yttrium oxide (Bi_{1.47}Cu_{0.04}Y_{0.49}O₃)

RL: PNU (Preparation, unclassified); PREP (Preparation)

(formation in Ti-doped bismuth oxide based mixed ionic-electronic conductors)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L7 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:366074 HCAPLUS Full-text

DOCUMENT NUMBER: 125:63161

TITLE: Single-component solid oxide bodies for fuel
cells and other electrochemical devices

INVENTOR(S): Worrell, Wayne; Han, Ping; Uchimoto, Yoshiharu

PATENT ASSIGNEE(S): University of Pennsylvania, USA

SOURCE: U.S., 15 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5518830	A	19960521	US 1995-440544	199505 12
WO 9636085	A1	19961114	WO 1996-US6674	199605 10
W: AU, CA, JP				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9658566	A1	19961129	AU 1996-58566	199605 10
PRIORITY APPLN. INFO.:			US 1995-440544	A 199505 12
			WO 1996-US6674	W 199605 10

AB In preferred embodiments, the single-component bodies comprise an anodic region at a 1st, a cathodic region at a 2nd, nonadjacent side, and an O ion-conducting region substantially free from anodic or cathodic character disposed between the anodic and cathodic regions. The single-component bodies comprise oxide electrolytes such as Y₂O₃-stabilized ZrO₂ doped with multivalent cations such as Ti or Tb.

IT 178470-30-9D, Bismuth titanium yttrium oxide

(Bi_{0.55}-0.8Ti_{0.09}-0.24Y_{0.11}-0.21O₂), oxygen-deficient

RL: TEM (Technical or engineered material use); USES (Uses)

(anodic region of single-component solid oxide bodies for fuel
cells and other electrochem. devices)

RN 178470-30-9 HCAPLUS

CN Bismuth titanium yttrium oxide (Bi_{0.55}-0.8Ti_{0.09}-0.24Y_{0.11}-0.21O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Bi	0.55 - 0.8	7440-69-9
Y	0.11 - 0.21	7440-65-5
Ti	0.09 - 0.24	7440-32-6

IC ICM H01M008-10

INCL 429031000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 76

IT 178470-28-5D, Titanium yttrium zirconium oxide (Ti_{0.09}-0.24Y_{0.11}-0.21Zr_{0.55}-0.8O₂), oxygen-deficient 178470-29-6D, Cerium titanium yttrium oxide (Ce_{0.55}-0.8Ti_{0.09}-0.24Y_{0.11}-0.21O₂), oxygen-deficient 178470-30-9D, Bismuth titanium yttrium oxide (Bi_{0.55}-0.8Ti_{0.09}-0.24Y_{0.11}-0.21O₂), oxygen-deficient 178470-31-0D, Scandium titanium zirconium oxide (Sc_{0.11}-0.21Ti_{0.09}-0.24Zr_{0.55}-0.8O₂), oxygen-deficient 178470-32-1D, Cerium scandium titanium oxide (Ce_{0.55}-0.8Sc_{0.11}-0.21Ti_{0.09}-0.24O₂), oxygen-deficient 178470-33-2D, Bismuth scandium titanium oxide (Bi_{0.55}-0.8Sc_{0.11}-0.21Ti_{0.09}-0.24O₂), oxygen-deficient 178470-34-3D, Bismuth samarium titanium oxide (Bi_{0.55}-0.8Sm_{0.11}-0.21Ti_{0.09}-0.24O₂), oxygen-deficient 178470-35-4D, Cerium samarium titanium oxide (Ce_{0.55}-0.8Sm_{0.11}-0.21Ti_{0.09}-0.24O₂), oxygen-deficient 178470-36-5D, Samarium titanium zirconium oxide (Sm_{0.11}-0.21Ti_{0.09}-0.24Zr_{0.55}-0.8O₂), oxygen-deficient 178470-37-6D, Titanium ytterbium zirconium oxide (Ti_{0.09}-0.24Yb_{0.11}-0.21Zr_{0.55}-0.8O₂), oxygen-deficient 178470-38-7D, Cerium titanium ytterbium oxide (Ce_{0.55}-0.8Ti_{0.09}-0.24Yb_{0.11}-0.21O₂), oxygen-deficient 178470-39-8D, Bismuth titanium ytterbium oxide (Bi_{0.55}-0.8Ti_{0.09}-0.24Yb_{0.11}-0.21O₂), oxygen-deficient

RL: TEM (Technical or engineered material use); USES (Uses)
(anodic region of single-component solid oxide bodies for fuel cells and other electrochem. devices)

L7 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:42642 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 124:160964

TITLE: Crystal chemistry and dielectric properties of Bi₄Ti₃O₁₂ by the substitution of rare earth elements (Y, Nd, Sm, Gd)

AUTHOR(S): Ko, Taegyung; Bang, Kyuseok

CORPORATE SOURCE: Dept. of Ceramic Eng., Inha Univ., S. Korea

SOURCE: Yoop Hakhoechi (1995), 32(10), 1178-88

CODEN: YPHJAP; ISSN: 0372-7807

PUBLISHER: Korean Ceramic Society

DOCUMENT TYPE: Journal

LANGUAGE: Korean

AB Bi₄Ti₃O₁₂ (BIT) and its rare earth (Y, Nd, Sm, Gd)-substituted derivs. were synthesized using a sol-gel method to study their microstructures, crystal structures and elec. properties depending on the substituted elements. Nd- or Sm-substitution into BIT appeared to be favorable, while Y- and Gd-substitution occurred with a pyrochlore phase. This suggests that a smaller trivalent rare earth ion may not be favorable in the structure of BIT. The rare earth derivs. showed that their particle sizes and shapes were considerably different depending on the kinds of substituted elements. Y-substitution resulted in developing a relatively even particle size and a dense microstructure. In structure, they may be similar to the pseudo-orthorhombic BIT but close to a paraelec. tetragonal

phase. Their a (or b) axes were shortened, compared to that of BIT. Such a distortion may result in a decrease in the tilting of TiO₆. BIT and the derivs. showed that their dielec. consts. and losses were 40-120 and <0.03, resp. in the frequency range of 1-10 MHz. The dielec. loss of Y-substituted derivative was the lowest one and changed a little with frequency. Curie points were observed in all the derivs. like BIT to suggest that they would be ferroelec. The temperature stability of the dielec. properties of the derivs. below the Curie points was relatively better than that of BIT.

IT 173393-00-5, Bismuth titanium yttrium oxide (Bi₂Ti₃Y₂O₁₂)
 RL: PRP (Properties)
 (crystal chemical and dielec. properties of)
 RN 173393-00-5 HCAPLUS
 CN Bismuth titanium yttrium oxide (Bi₂Ti₃Y₂O₁₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	2	7440-69-9
Y	2	7440-65-5
Ti	3	7440-32-6

CC 75-8 (Crystallography and Liquid Crystals)

Section cross-reference(s): 78

IT 12431-23-1, Bismuth samarium titanium oxide bi₂sm₂ti₃o₁₂
 56095-21-7, Bismuth gadolinium titanium oxide bi₂gd₂ti₃o₁₂
 56095-26-2, Bismuth neodymium titanium oxide (Bi₂Nd₂Ti₃O₁₂)
 173393-00-5, Bismuth titanium yttrium oxide (Bi₂Ti₃Y₂O₁₂)

RL: PRP (Properties)

(crystal chemical and dielec. properties of)

=> d l15 ibib abs hitstr hitind 1-8

L15 ANSWER 1 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:237295 HCAPLUS Full-text

DOCUMENT NUMBER: 144:284675

TITLE: UV sensors, sensor arrays, and current measuring apparatus

INVENTOR(S): Ichiki, Masaaki; Morikawa, Yasushi; Nonaka, Kazuhiro; Maeda, Ryutaro

PATENT ASSIGNEE(S): National Institute of Advanced Industrial Science & Technology, Japan; Takashima Sangyo Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2006073669	A2	20060316	JP 2004-253410	

200408
31

PRIORITY APPLN. INFO.: JP 2004-253410

200408
31

AB The sensor comprises a dielec. film, e.g. polycryst., single crystal, showing photovoltaic effect placed in between a pair of electrode and generates elec. power corresponding the light energy reaching the dielec. film, without application of bias voltage. Preferably, the photovoltaic film comprises Pb-containing dielecs. or Pb-free dielecs. and may also be doped. Preferably compds. and dopants are given. The sensors are small-sized and give large output current.

IT 12441-73-5, Bismuth titanium oxide (Bi₁₂TiO₂₀)
 RL: DEV (Device component use); USES (Uses)
 (dielec. single or polycrystal; amperometric sensors with (doped) dielec. single or polycrystal photovoltaic films)

RN 12441-73-5 HCAPLUS

CN Bismuth titanium oxide (Bi₁₂TiO₂₀) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	20	17778-80-2
Bi	12	7440-69-9
Ti	1	7440-32-6

IT 7440-65-5, Yttrium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (dopant in dielec. single or polycrystal; amperometric sensors with (doped) dielec. single or polycrystal photovoltaic films)

RN 7440-65-5 HCAPLUS

CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

CC 76-14 (Electric Phenomena)

IT 513-29-1, TGS 1314-13-2, Zinc oxide (ZnO), uses 1344-48-5, Mercury sulfide (HgS) 7631-86-9, Silica, uses 12030-85-2, Niobium potassium oxide (KNbO₃) 12031-49-1, Lanthanum sulfide (La₂S₃) 12031-63-9, Lithium niobium oxide (LiNbO₃) 12034-09-2, Niobium sodium oxide (NaNbO₃) 12047-27-7, Barium titanate (BaTiO₃), uses 12060-00-3, Lead titanate 12063-98-8, Gallium phosphide (GaP), uses 12134-77-9, Gadolinium sulfide (Gd₂S₃) 12233-73-7, Bismuth germanium oxide (Bi₁₂GeO₂₀) 12297-31-3, Bismuth calcium titanium oxide (CaBi₄Ti₄O₁₅) 12377-72-9, Bismuth silicon oxide (Bi₁₂SiO₂₀) 12441-73-5, Bismuth titanium oxide (Bi₁₂TiO₂₀) 12626-81-2, PZT 12676-60-7, PLZT 13816-38-1, Antimony sulfur iodide (SbSI) 13859-50-2 15277-09-5, Lead magnesium tungsten oxide (Pb(Mg_{1/2}W_{1/2})O₃) 24937-79-9, PVDF 28960-88-5, P(VDF/TrFE) 37305-89-8, Barium titanate zirconate 37349-19-2, Lead magnesium niobate 65762-08-5 77114-58-0, Calcium gallium germanium oxide (Ca₃Ga₂Ge₄O₁₄) 82642-19-1, Gallium lanthanum silicon oxide (Ga₅La₃SiO₁₄) 112073-27-5, Niobium potassium sodium oxide (Nb(K,Na)O₃) 113876-85-0, Barium calcium titanate ((Ba,Ca)TiO₃) 116328-12-2, Lithium niobium sodium oxide ((Li,Na)NbO₃) 151862-30-5, Lead niobium titanium zinc oxide (PbNb_{0.61}Ti_{0.09}Zn_{0.30}) 158033-02-4, Lead magnesium titanium tungsten oxide 198691-85-9, Hydrogen sulfide (D₂S₃) 206875-02-7, Lanthanum niobium zinc oxide (LaNb_{0.33}Zn_{0.67}O₃) 210356-75-5 214489-40-4, Barium gallium tantalum oxide silicate

(Ba₃Ga₃TaO₆(SiO₄)₂) 878270-67-8 878270-68-9, Bismuth
praseodymium titanium oxide

RL: DEV (Device component use); USES (Uses)

(dielec. single or polycrystal; amperometric sensors with (doped)
dielec. single or polycrystal photovoltaic films)

IT 7429-90-5, Aluminum, uses 7429-91-6, Dysprosium, uses 7439-89-6,
Iron, uses 7439-91-0, Lanthanum, uses 7439-93-2, Lithium, uses
7439-94-3, Lutetium, uses 7439-95-4, Magnesium, uses 7439-96-5,
Manganese, uses 7439-98-7, Molybdenum, uses 7440-00-8,
Neodymium, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses
7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-09-7,
Potassium, uses 7440-10-0, Praseodymium, uses 7440-12-2,
Promethium, uses 7440-18-8, Ruthenium, uses 7440-19-9, Samarium,
uses 7440-20-2, Scandium, uses 7440-21-3, Silicon, uses
7440-22-4, Silver, uses 7440-23-5, Sodium, uses 7440-24-6,
Strontium, uses 7440-25-7, Tantalum, uses 7440-27-9, Terbium,
uses 7440-30-4, Thulium, uses 7440-31-5, Tin, uses 7440-33-7,
Tungsten, uses 7440-34-8, Actinium, uses 7440-36-0, Antimony,
uses 7440-38-2, Arsenic, uses 7440-39-3, Barium, uses
7440-42-8, Boron, uses 7440-45-1, Cerium, uses 7440-48-4,
Cobalt, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses
7440-53-1, Europium, uses 7440-54-2, Gadolinium, uses 7440-55-3,
Gallium, uses 7440-56-4, Germanium, uses 7440-58-6, Hafnium,
uses 7440-62-2, Vanadium, uses 7440-64-4, Ytterbium, uses
7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses
7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7723-14-0,
Phosphorus, uses 7782-41-4, Fluorine, uses 7782-49-2, Selenium,
uses

RL: DEV (Device component use); MOA (Modifier or additive
use); USES (Uses)

(dopant in dielec. single or polycrystal; amperometric
sensors with (doped) dielec. single or polycrystal
photovoltaic films)

L15 ANSWER 2 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:559338 HCAPLUS Full-text

DOCUMENT NUMBER: 143:101788

TITLE: Lead-free piezoelectric ceramics based on barium
bismuth titanate with dopant oxides and rare
earth oxides

INVENTOR(S): Xiao, Dingquan

PATENT ASSIGNEE(S): Sichuan University, Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, No
pp. given

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1541980	A	20041103	CN 2003-10110881	200311 07
			CN 2003-10110881	200311 07

PRIORITY APPLN. INFO.:

AB The lead-free piezoelec. ceramic composition with high piezoelec. performance is one perovskite type environment consistency piezoelec. ceramic composition The composition has the general expression of $(1-x)(\text{Bi}_{1-y}\text{Ly})_{1-w}(\text{Na}_{1-z}\text{Li}_z)\text{wTiO}_3 + x\text{BaTiO}_3 + a\text{M}\alpha\text{O}\beta$, where x is 0-1, y 0-0.1, z 0-0.1, w 0.3-0.7, L is RE elements La, Y, Ce, Pr, Nd, Sm, etc.; $\text{M}\alpha\text{O}\beta$ is doping oxide(s) in the content an of 0-10 %; M is +1.apprx.+6 valent element capable of forming solid oxide, such as Na, K, Li, Ni, Zn, Cr, etc. with α and β being atom number The piezoelec. ceramic composition has d_{33} up to 200 pC/N, k_p up to 35.0 % and stable technol. process, may be produced via traditional piezoelec. ceramic preparation process and industrial material, and is practical.

IT 7440-65-5, Yttrium, uses

RL: MOA (Modifier or additive use); USES (Uses)

(in titanate ceramics; lead-free piezoelec. ceramics based on barium bismuth titanate with dopant oxides and rare earth oxides)

RN 7440-65-5 HCAPLUS

CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

IT 12267-82-2, Bismuth titanate (BiTiO_3)

RL: TEM (Technical or engineered material use); USES (Uses)

(piezoelec. ceramics; lead-free piezoelec. ceramics based on barium bismuth titanate with dopant oxides and rare earth oxides)

RN 12267-82-2 HCAPLUS

CN Bismuth titanium oxide (BiTiO_3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Bi	1	7440-69-9
Ti	1	7440-32-6

IC ICM C04B035-462

ICS C04B035-465; H01L041-187; H01B003-12

CC 57-2 (Ceramics)

Section cross-reference(s): 76

IT 7439-91-0, Lanthanum, uses 7439-93-2, Lithium, uses 7440-00-8, Neodymium, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-23-5, Sodium, uses 7440-45-1, Cerium, uses 7440-65-5, Yttrium, uses

RL: MOA (Modifier or additive use); USES (Uses)

(in titanate ceramics; lead-free piezoelec. ceramics based on barium bismuth titanate with dopant oxides and rare earth oxides)

IT 12047-27-7, Barium titanate (BaTiO_3), uses 12267-82-2, Bismuth titanate (BiTiO_3)

RL: TEM (Technical or engineered material use); USES (Uses)

(piezoelec. ceramics; lead-free piezoelec. ceramics based on barium bismuth titanate with dopant oxides and rare earth oxides)

L15 ANSWER 3 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:310665 HCAPLUS Full-text

DOCUMENT NUMBER: 140:330918

TITLE: Yttrium-doped bismuth titanate thin film and preparation thereof

→ current application

INVENTOR(S): Rhee, Shi-Woo; Kang, Sang-Woo
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 5 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004071875	A1	20040415	US <u>2003-672753</u>	200309 26
KR 2004028033	A	20040403	KR 2002-59111	200209 28
JP 2004162175	A2	20040610	JP 2003-334481	200309 26

PRIORITY APPLN. INFO.: KR 2002-59111 A
 200209
 28

AB A bismuth yttrium titanate (BYT) film having a given composition has enhanced residual polarization and elec. fatigue properties with excellent ferroelec. property. Therefore, it can be advantageously used in an elec. or electronic device including a FRAM device, the composition being $\text{Bi}_{4-x}\text{Y}_x\text{Ti}_3\text{O}_{12}$, wherein x is an integer of 0.1 to 2.

IT 7440-65-5, Yttrium, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (dopant; preparation of yttrium-doped bismuth titanate thin films)

RN 7440-65-5 HCAPLUS

CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

IT 11115-71-2P, Bismuth titanate
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (preparation of yttrium-doped bismuth titanate thin films)

RN 11115-71-2 HCAPLUS

CN Bismuth titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Bi	x	7440-69-9
Ti	x	7440-32-6

IC ICM C23C016-00

INCL 427248100

CC 76-8 (Electric Phenomena)

IT 7440-65-5, Yttrium, uses

RL: MOA (Modifier or additive use); USES (Uses)
(dopant; preparation of yttrium-doped bismuth
titanate thin films)

IT 11115-71-2P, Bismuth titanate

RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(preparation of yttrium-doped bismuth titanate thin films)

L15 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:721569 HCAPLUS Full-text

DOCUMENT NUMBER: 140:9129

TITLE: Effects of precursor solution pH value and
substrate texture on orientation degree of
sol-gel-derived bismuth titanate thin films

AUTHOR(S): Gu, Haoshuang; Cao, Wanqiang; Song, Rui; Zhou,
Xiaoyuan; Wang, John

CORPORATE SOURCE: Faculty of Physics and Electronic Technology,
Hubei University, Wuhan, 430062, Peop. Rep.
China

SOURCE: Physica Status Solidi A: Applied Research
(2003), 198(2), 282-288

CODEN: PSSABA; ISSN: 0031-8965

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The c-axis oriented Bi₄Ti₃O₁₂ thin films were prepared on Si(100), Y-ZrO₂(100),
SrTiO₃(100) crystal, (111)Pt/Ti/Si and quartz glass substrates by sol-gel
processing with Bi nitrate and Ti butoxide. Effects of the lattice structure of
the substrates, the annealing temperature, and the pH value of the solution on the
orientation degree of Bi₄Ti₃O₁₂ thin films were studied. Bi₄Ti₃O₁₂ thin films
with pure perovskite phase were obtained by using a solution of pH 2.5-3.5. The
reaction mechanism in the precursor solution and the formation mechanism of c-axis
orientation perovskite phase of Bi₄Ti₃O₁₂ thin films on various substrates were
discussed. Completely c-axis oriented Bi₄Ti₃O₁₂ thin film on SrTiO₃(100)
substrate and highly c-axis oriented Bi₄Ti₃O₁₂ thin film on quartz glass substrate
were acquired by using a solution of pH 3.5.

IT 12010-77-4P, Bismuth titanium oxide (Bi₄Ti₃O₁₂)

RL: FMU (Formation, unclassified); PRP (Properties); SPN (Synthetic
preparation); FORM (Formation, nonpreparative); PREP (Preparation)
(film, perovskite-type; effects of precursor solution pH value and
substrate texture on orientation degree of sol-gel-derived
bismuth titanate thin films)

RN 12010-77-4 HCAPLUS

CN Bismuth titanium oxide (Bi₄Ti₃O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	4	7440-69-9
Ti	3	7440-32-6

IT 7440-65-5, Yttrium, uses

RL: NUU (Other use, unclassified); USES (Uses)
(substrate; orientation degree of sol-gel-derived bismuth
titanate thin films on Y-ZrO₂(100))

RN 7440-65-5 HCAPLUS

CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

CC 66-4 (Surface Chemistry and Colloids)
 IT 12010-77-4P, Bismuth titanium oxide (Bi₄Ti₃O₁₂)
 RL: FMU (Formation, unclassified); PRP (Properties); SPN (Synthetic preparation); FORM (Formation, nonpreparative); PREP (Preparation) (film, perovskite-type; effects of precursor solution pH value and substrate texture on orientation degree of sol-gel-derived bismuth titanate thin films)
 IT 1314-23-4, Zirconium oxide (ZrO₂), uses 7440-65-5, Yttrium, uses
 RL: NUU (Other use, unclassified); USES (Uses) (substrate; orientation degree of sol-gel-derived bismuth titanate thin films on Y-ZrO₂(100))
 REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 5 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:11085 HCAPLUS Full-text
 DOCUMENT NUMBER: 136:94476
 TITLE: Methods of manufacturing integrated circuit devices that include a metal oxide layer disposed on another layer to protect the other layer from diffusion of impurities and integrated circuit devices manufactured using same
 INVENTOR(S): Cho, Hag-Ju
 PATENT ASSIGNEE(S): Samsung Electronics Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 10 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2002001971	A1	20020103	US 2001-893035	20010627
US 6821862	B2	20041123		
KR 2002001264	A	20020109	KR 2000-35708	20000627
JP 2002093797	A2	20020329	JP 2001-191316	20010625

PRIORITY APPLN. INFO.: KR 2000-35708 A 20000627

AB Integrated circuit devices are manufactured by exposing at least a portion of an insulation layer that comprises O to a metal precursor that is reactive with O so as to form a metal oxide layer on the portion of the insulation layer. The metal oxide layer may reduce the diffusion of impurities, such as H, into the insulation layer, which may degrade the elec. characteristics of the insulation layer.

IT 7440-65-5, Yttrium, uses
 RL: DEV (Device component use); USES (Uses)
 (methods of manufacturing integrated circuit devices that include a
 metal oxide layer disposed on another layer to protect other
 layer from diffusion of impurities and integrated circuit devices
 manufactured using same)
 RN 7440-65-5 HCAPLUS
 CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

IT 12010-77-4, Bismuth titanium oxide (Bi₄Ti₃O₁₂)
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (methods of manufacturing integrated circuit devices that include a
 metal oxide layer disposed on another layer to protect other
 layer from diffusion of impurities and integrated circuit devices
 manufactured using same)
 RN 12010-77-4 HCAPLUS
 CN Bismuth titanium oxide (Bi₄Ti₃O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	12	17778-80-2
Bi	4	7440-69-9
Ti	3	7440-32-6

IC ICM H01L021-31
 INCL 438765000
 CC 76-3 (Electric Phenomena)
 IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-03-1,
 Niobium, uses 7440-24-6, Strontium, uses 7440-25-7, Tantalum,
 uses 7440-32-6, Titanium, uses 7440-45-1, Cerium, uses
 7440-58-6, Hafnium, uses 7440-65-5, Yttrium, uses
 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses
 RL: DEV (Device component use); USES (Uses)
 (methods of manufacturing integrated circuit devices that include a
 metal oxide layer disposed on another layer to protect other
 layer from diffusion of impurities and integrated circuit devices
 manufactured using same)
 IT 1314-61-0, Tantalum oxide (Ta₂O₅) 1344-28-1, Alumina, uses
 7631-86-9, Silica, uses 12010-77-4, Bismuth titanium oxide
 (Bi₄Ti₃O₁₂) 12047-27-7, Barium titanate (BaTiO₃), uses
 12060-00-3, Lead titanium oxide (PbTiO₃) 12060-59-2, Strontium
 titanate (SrTiO₃) 12676-60-7, Lanthanum lead titanium zirconium
 oxide (La₀-1Pb₀-1Ti₀-1Zr₀-1O₃) 13463-67-7, Titanium dioxide, uses
 37303-24-5, Barium strontium titanium oxide (Ba₀-1Sr₀-1TiO₃)
 50811-07-9, Bismuth strontium tantalum oxide (Bi₂SrTa₂O₉)
 RL: DEV (Device component use); TEM (Technical or engineered
 material use); USES (Uses)
 (methods of manufacturing integrated circuit devices that include a
 metal oxide layer disposed on another layer to protect other
 layer from diffusion of impurities and integrated circuit devices
 manufactured using same)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE

IN THE RE FORMAT

L15 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:10857 HCAPLUS Full-text
 DOCUMENT NUMBER: 136:61325
 TITLE: MgZnO based UV detectors
 INVENTOR(S): Vispute, Ratnakar D.; Venkatesan, Thirumalai;
 Yang, Wei; Choo-pun, Supab
 PATENT ASSIGNEE(S): University of Maryland, USA
 SOURCE: PCT Int. Appl., 40 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002001650	A1	20020103	WO 2001-US41124	20010626

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-214196P P 20000626

AB UV detectors, which maybe visible or solar blind, are described comprising a Mg_xZn_{1-x}O film, wherein x has a value such that the film is sensitive to UV light at ~150-400 nm, wherein a buffer layer is interposed between the film and the substrate, the buffer layer comprising a material such as SrTiO₃/SrO, SrTiO₃/TiN and BiTiO₁₂/Y-stabilized ZrO₂, that ameliorates any lattice and/or thermal mismatch between the film and substrate. Fabrication of the UV detectors is also described.

IT 12267-82-2, Bismuth titanium oxide (BiTiO₃)
 RL: DEV (Device component use); USES (Uses)
 (magnesium zinc oxide-based visible-blind UV detectors)

RN 12267-82-2 HCAPLUS

CN Bismuth titanium oxide (BiTiO₃) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Bi	1	7440-69-9
Ti	1	7440-32-6

IT 7440-65-5, Yttrium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(magnesium zinc oxide-based visible-blind UV detectors)

RN 7440-65-5 HCAPLUS

CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

IC ICM H01L033-00

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 76

IT 1309-48-4, Magnesium oxide (MgO), uses 1314-11-0, Strontium oxide (SrO), uses 1314-13-2, Zinc oxide (ZnO), uses 1314-23-4, Zirconium oxide (ZrO₂), uses 1344-28-1, Alumina, uses 7440-21-3, Silicon, uses 12060-59-2, Strontium titanate (SrTiO₃) 12267-82-2, Bismuth/titanium oxide (BiTiO₃) 25583-20-4, Titanium nitride (TiN) 116790-33-1, Magnesium zinc oxide (Mg_{0.1}Zn_{0.9}O) 116790-44-4, Magnesium zinc oxide (Mg_{0.2}Zn_{0.8}O) 145114-14-3, Magnesium zinc oxide (Mg_{0.34}Zn_{0.66}O) 382180-12-3, Magnesium zinc oxide (Mg_{0.79}Zn_{0.21}O) 382180-13-4, Magnesium zinc oxide (Mg_{0.87}Zn_{0.13}O)

RL: DEV (Device component use); USES (Uses)

(magnesium zinc oxide-based visible-blind UV detectors)

IT 7440-65-5, Yttrium, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(magnesium zinc oxide-based visible-blind UV detectors)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L15 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1994:537105 HCAPLUS Full-text

DOCUMENT NUMBER: 121:137105

TITLE: Precursors for the manufacture of oxides, and manufacture of the precursors and barium strontium titanate electronic thin films

INVENTOR(S): Scott, Michael E.; Paz De Araujo, Carlos A.; McMillan, Larry D.

PATENT ASSIGNEE(S): Symetrix Corp., USA

SOURCE: PCT Int. Appl., 33 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 68

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 9410084	A1	19940511	WO 1993-US10150	199310 21
W: CA, DE, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5423285	A	19950613	US 1992-981133	199211

US 5456945	A	19951010	US 1992-993380	24
				199212
				18
US 5514822	A	19960507	US 1993-132744	199310
				06
EP 665814	A1	19950809	EP 1994-901186	199310
				21
EP 665814	B1	19970115		
R: DE, FR, GB, NL				
JP 08502946	B4	19960402	JP 1994-511197	199310
				21
JP 08502946	T2	19960402		
JP 3113281	B2	20001127		
PRIORITY APPLN. INFO.:			US 1992-965190	A
				199210
				23
			US 1992-981133	A
				199211
				24
			US 1992-993380	A
				199212
				18
			US 1993-132744	A
				199310
				06
			US 1988-290468	B2
				198812
				27
			US 1991-660428	B2
				199102
				25
			US 1991-690940	A2
				199106
				17
			US 1991-807439	B2
				199112
				13
			WO 1993-US10150	W
				199310
				21

AB A 1st metal, an alc., and a carboxylic acid are reacted to form a metal alkoxycarboxylate, which is then reacted with an alkoxide and/or a carboxylate of a 2nd metal to form a precursor. Alternatively, a metal carboxylate and a metal alkoxide are combined and heated to form the precursor. Either way, the precursor includes all or most of the metal-O-metal bonds of a desired metal oxide and a carboxylate ligand. The precursor is applied to a substrate, dried, and annealed to form the metal oxide, e.g., BaxSr_{1-x}TiO₃. The metal-O-metal bonds in the

precursor permit the desired metal oxide to be formed from the precursor in a single step, providing excellent thin films suitable for integrated circuits. The carboxylate ligand provides stability to the precursor, allowing it to be stored for periods common to large-scale manufacturing

IT 12010-77-4P, Bismuth titanate (Bi₄Ti₃O₁₂)

RL: PREP (Preparation)

(layers, formation of, in strontium titanate film manufacture for electronic devices)

RN 12010-77-4 HCAPLUS

CN Bismuth titanium oxide (Bi₄Ti₃O₁₂) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	12	17778-80-2
Bi	4	7440-69-9
Ti	3	7440-32-6

IT 7440-65-5, Yttrium, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with alcs. and carboxylic acids, for alkoxy-carboxylates in oxide film manufacture for electronic devices)

RN 7440-65-5 HCAPLUS

CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

IC ICM C01B013-32

ICS C01G023-00; C07F007-00

CC 49-3 (Industrial Inorganic Chemicals)

Section cross-reference(s): 76

IT 12010-77-4P, Bismuth titanate (Bi₄Ti₃O₁₂)

RL: PREP (Preparation)

(layers, formation of, in strontium titanate film manufacture for electronic devices)

IT 7439-89-6, Iron, reactions 7439-91-0, Lanthanum, reactions

7439-92-1, Lead, reactions 7439-95-4, Magnesium, reactions

7439-96-5, Manganese, reactions 7440-02-0, Nickel, reactions

7440-03-1, Niobium, reactions 7440-20-2, Scandium, reactions

7440-24-6, Strontium, reactions 7440-25-7, Tantalum, reactions

7440-28-0, Thallium, reactions 7440-32-6, Titanium, reactions

7440-33-7, Tungsten, reactions 7440-36-0, Antimony, reactions

7440-39-3, Barium, reactions 7440-47-3, Chromium, reactions

7440-48-4, Cobalt, reactions 7440-58-6, Hafnium, reactions

7440-65-5, Yttrium, reactions 7440-66-6, Zinc, reactions

7440-67-7, Zirconium, reactions 7440-69-9, Bismuth, reactions

7440-70-2, Calcium, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with alcs. and carboxylic acids, for alkoxy-carboxylates in oxide film manufacture for electronic devices)

L15 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1987:488081 HCAPLUS Full-text

DOCUMENT NUMBER: 107:88081

TITLE: Dielectric compositions

INVENTOR(S): Alexander, John Henry; Jackson, Dawn Anita

PATENT ASSIGNEE(S): STC PLC, UK

SOURCE: Brit. UK Pat. Appl., 9 pp.
 CODEN: BAXXDU
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2182032	A1	19870507	GB 1985-26227	198510 24
US <u>4724511</u>	A	19880209	US 1986-921162	198610 20
PRIORITY APPLN. INFO.:				GB 1985-26227 A 198510 24

AB Dielec. compns. for ceramic capacitors comprise a base of nonstoichiometric Pb Mg niobate, nonstoichiometric Pb Zn niobate, PbZrO₃, TiO₂, and Bi₂Ti₂O₇ containing an additive, especially NiO, MnO₂, CoO, or a rare earth. The compns. have low firing temps. (99-1000°), high dielec. consts. (≤14,750), low tan δ (<2.5% at 20°), and capacitance variations within +22 and -56% of the 25° value between 10 and 85°.

IT 7440-65-5, uses and miscellaneous 12048-51-0,
 Bismuth titanate (Bi₂Ti₂O₇)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (lead magnesium niobate-lead zinc niobate dielec. ceramics
 containing, for capacitors)

RN 7440-65-5 HCAPLUS
 CN Yttrium (8CI, 9CI) (CA INDEX NAME)

Y

RN 12048-51-0 HCAPLUS
 CN Bismuth titanium oxide (Bi₂Ti₂O₇) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Bi	2	7440-69-9
Ti	2	7440-32-6

IC ICM C04B035-00
 CC 76-10 (Electric Phenomena)
 Section cross-reference(s): 57

IT 1306-38-3, Cerium dioxide, uses and miscellaneous 1307-96-6,
 Cobalt monoxide, uses and miscellaneous 1312-81-8, Lanthanum
 sesquioxide 1313-13-9, Manganese dioxide, uses and miscellaneous
 1313-99-1, Nickel monoxide, uses and miscellaneous 7429-91-6,
 Dysprosium, uses and miscellaneous 7439-91-0, Lanthanum, uses and
 miscellaneous 7440-00-8, Neodymium, uses and miscellaneous
 7440-10-0, Praseodymium, uses and miscellaneous 7440-19-9,
 Samarium, uses and miscellaneous 7440-27-9, Terbium, uses and
 miscellaneous 7440-45-1, Cerium, uses and miscellaneous

7440-52-0, Erbium, uses and miscellaneous 7440-53-1, Europium, uses and miscellaneous 7440-54-2, Gadolinium, uses and miscellaneous 7440-60-0, Holmium, uses and miscellaneous 7440-64-4, Ytterbium, uses and miscellaneous 7440-65-5, uses and miscellaneous 12048-51-0, Bismuth titanate ($\text{Bi}_2\text{Ti}_2\text{O}_7$) 12060-01-4, Lead zirconate (PbZrO_3) 13463-67-7, Titania, uses and miscellaneous
RL: TEM (Technical or engineered material use); USES (Uses)
(lead magnesium niobate-lead zinc niobate dielec. ceramics containing, for capacitors)

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